Docket No: AM100151-01
Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re of Application of:	Childers et al.		
Serial No.:	09/706,683	Group Art No.:	1624
Filed:	November 6, 2000	Examiner:	E. Bernhards
For:	BRANCHED ADAMANTYL AND NORADAMANTYL ARYL-AND ARALKYLPIPERAZINES WITH SEROTININ 5-HT1A ACTIVITY		
Confirmation No.:	8281		
Customer Number:	25291		

Commissioner for Patents
Washington, DC 20231

BRIEF FOR APPELLANT

Sir:

This is an Appeal before the Board of Patent Appeals and Interferences from the Final Rejection of claims 1-3, 16 and 27-30, and objection to claims 4, 7-12 and 14-15. An oral hearing is not requested.

This Appeal Brief is being filed in triplicate. A copy of the case authorities cited is enclosed. The required fee for this appeal may be charged to Deposit Account No. 01-1425.

CERTIFICATE OF MAILING 37 CFR §1.10

I hereby certify that this paper and the documents referred to as enclosed therein are being deposited with the United States Postal Service on the date written below in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number **EV 080131055 US** addressed to the Commissioner for Patents, Box PATENT APPLICATION, Washington, DC 20231.

April 16, 2002
Date

Cecilia Chessell
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I. Real Party In Interest

The real party in interest is Wyeth (formerly American Home Products Corporation), a Delaware corporation having its main offices at Five Giralda Farms, Madison, New Jersey 07940.

II. Related Appeals And Interferences

None.

III. Status Of Claims

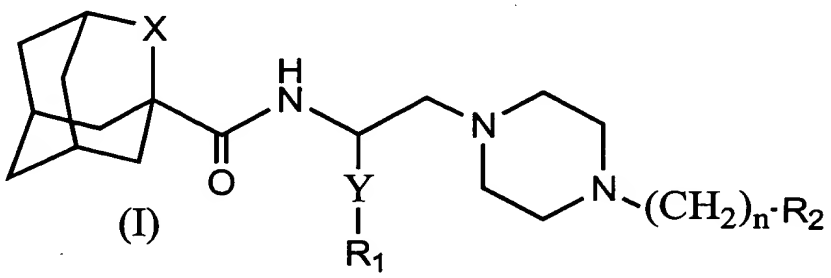
Claims 4, 7-12 and 14-15 have been objected to for depending on a rejected base claim, but have been deemed allowable if written in independent form. Claims 1-3, 16 and 27-30 stand rejected.

IV. Status Of Amendments

Applicants' Amendment Pursuant To 37 C.F.R. § 1.312 has been entered.

V. Summary Of The Invention

The invention comprises a compound of the formula (I):



(I)

X is selected from $-CH_2-$ or a chemical bond;
Y is selected from $-(CH_2)_m-$ or $-(CH_2)-O-(CH_2)-$;
m is selected from the integer 0 or 1;

n is selected from the integer 0 or 1;

R_1 and R_2 are independently selected from the group consisting of aryl, monocyclic heteroaryl having 5 – 6 ring atoms of which 1-3 ring atoms are independently selected from the group consisting of N, S and O, and bicyclic heteroaryl having a phenyl ring fused to a monocyclic heteroaryl ring as defined above, optionally substituted with F, Cl, Br, I, -OH, -NH_2, -CO_2H, -CO_2-C_1–C_6 alkyl, -CN, -NO_2, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perhaloalkyl, OR_3, or C_1–C_6 perhaloalkoxy;

R_3 is selected from the group consisting of H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_6–C_{10} aryl, monocyclic heteroaryl having 5 –6 ring atoms of which 1-3 ring atoms are independently selected from the group consisting of N, S and O, and bicyclic heteroaryl having a phenyl ring fused to a monocyclic heteroaryl ring as defined above, C_7–C_{14} aralkyl, and mono or bicyclic heteroaralkyl consisting of a C_1-C_4 alkyl having a substituent which is a mono or bicyclic heteroaryl as defined above, where the aryl or heteroaryl group is optionally substituted with one to three substituents independently selected from the group consisting of F, Cl, Br, I, CN, -NH_2, -NO_2, -OH, alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perhaloalkyl, C_1–C_6 alkoxy, and C_1–C_6 perhaloalkoxy; and
the optical isomers or a pharmaceutically acceptable salt thereof. (See specification at page 3, line 28, to page 5, line 8.)

The invention further comprises a method for treating stroke comprising administering a therapeutically effective amount of a compound of formula (I) or a pharmaceutically acceptable salt thereof, to a patient in need of said treatment. (See specification at page 7, line 31, to page 8, line 14.)

VI. Issues

A. Has the Examiner erred in rejecting claims 1-2, 16 and 27-30 under 35 U.S.C. § 112, first paragraph, by failing to appreciate that those skilled in the art would understand how to make and use the claimed invention from the ample disclosure provided in the specification?

B. Has the Examiner erred in rejecting claims 1-3 under 35 U.S.C. § 103(a) in that the Examiner used hindsight reasoning and failed to appreciate that the cited references do not fairly teach or suggest the claimed invention as a whole?

C. Should claims 4, 7-12 and 14-15 be allowed because the rejection of claim 1 is erroneous?

VII. Grouping Of Claims

With respect to the rejection under 35 U.S.C. § 112, claims 1-2, 16, and 27-30 shall stand or fall together.

With respect to the rejection under 35 U.S.C. § 103, all of claims 1-3 shall stand or fall together.

With respect to the objection to claims 4, 7-12, and 14-15 as being dependent on a rejected claim all the claims shall stand or fall together, because all these claims depend on claim 1.

VIII. Argument

A. The rejection under 35 U.S.C. § 112, first paragraph, cannot stand in view of the clear and sufficient disclosure in the specification.

Claims 1, 2, 16 and 26-30 have been rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification in an enabling manner. Specifically, the Examiner has said that the specification does not teach how to make and use all the claimed compounds. The Examiner has concluded that the examples are sufficient in scope to support generic claim 3, but not to support claims 1 and 2. The Examiner's conclusion is contrary to the applicable law.

Applicants' specification clearly teaches how to make compounds of the present invention. In this regard, Applicants respectfully direct the Board's attention to the specification: page 8, line 14, to page 11, line 8; and Examples 1-7 on pages 12-18.

Applicants cannot be expected to describe or illustrate how to make each individual compound claimed. Those starting materials for which a method of making are not described are readily available and/or a method for making them is known to those skilled in the art, as is clearly set forth in the specification on page 8, lines 16-19, and page 9, lines 15-18. One of ordinary skill in the art would readily understand how to make the compounds of the invention from the disclosure in the specification.

The Examiner appears to have conceded that the how to make portion of this rejection has been overcome: on page 2 of the Advisory Action dated 3/14/2002 the Examiner has stated, "While the 'how to make' aspect of the par. one rejection may be overcome by applicants' urgung [sic] that starting materials... are commercially available...."

The specification also amply describes uses for the claimed compounds, e.g., page 6, line 31, to page 8, line 14. The specification sets forth details of preferred compositions and methods of administration for the compounds of this invention (page 20, line 15 to page 21, line 34); details not set forth are standard practice in the pharmaceutical industry. Absolutely no undue experimentation would be required for one skilled in the art to use the compounds as described in the specification.

Despite receiving two Office Actions and an Advisory Action, Applicants remain unenlightened as to the exact difficulty the Examiner envisions for one skilled in the art who wishes to follow the teachings of the specification. The Examiner has failed to provide any specific evidence or explanation to support this rejection. The Examiner appears to be arguing that the claims are too broad vis-à-vis the scope of the working examples in the specification. The Examiner's error is in requiring more than the law requires: the law requires a sufficient description in the specification, but does not require the specification to include examples illustrating the full scope of the invention.

The detailed description and examples of the specification would allow one of ordinary skill to practice the invention without undue experimentation. It is not the law that there must be an example for each compound; in fact, examples are not required at all in a patent application.

The first paragraph of 35 U.S.C. § 112 states:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

This paragraph contains no requirement that each embodiment, or any particular range thereof, must be illustrated or exemplified.

For all the foregoing reasons, the instant rejection is erroneous, and Applicants move the Board to vacate this rejection.

B. The cited prior art clearly does not teach or suggest the claimed invention as a whole.

Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Abou-Gharbia (5,254,552) in view of Cliffe (5,420,278). The Examiner has stated that for compounds where m=1 the cited art does not suggest the claimed compounds, but has erroneously concluded that where m=0 the claimed compounds are obvious from the cited art. The Examiner has erred in stating that the cited art provides sufficient motivation to employ phenyl in place of hydrogen in the closest compound of Abou-Gharbia ('552) and guidance as to how to make these compounds.

Abou-Gharbia '552 describes compounds which differ structurally from those claimed by Applicants. All of the reference compounds lack the Applicants' YR_1 group in the location it occupies in the claimed compounds. Additional differences from the claimed compounds include: the alkyl chain between the piperazine and the carboxamide group may be 2-5 carbon atoms long; the group on the other side of the carboxamide group may vary considerably in both the alkyl and cyclic portions thereof; and, the N of the carboxamide may be substituted, which is not permitted in Applicants' compounds. By selecting the "right" choice for each of these variables, the Examiner has identified compounds that differ from some of Applicants' compounds only by virtue of lacking the YR_1 group. Nevertheless, even these compounds are not compounds of the claimed invention, as the Examiner has conceded. By itself, this reference clearly does not teach or suggest the claimed invention.

Cliffe '278 describes piperazine compounds which differ from some of the claimed compounds at least in that the adamantyl or noradamantyl group is replaced by a different group. However, the most preferred reference compounds (see reference column 2, lines 52-64) are those wherein an ethyl chain is attached to a $-CO_2R^6$ ester group or a $-CONR^5R^9$ amide group, whereas in the claimed compounds the ethyl is attached to an -NCO-(nor)adamantyl group. Furthermore, in the preferred reference compounds the NR^5R^9 group forms a cyclic compound that includes the N, rather than having a separate cyclic group attached to the amide group. Therefore, not only is there no (nor)adamantyl group in the reference compounds, but the reference teaches that the preferred compounds do not have

the same atoms, or the same arrangement of atoms in the central chain as do the presently claimed compounds. However, using the Applicants' invention as a guide, the Examiner has selected those (non-preferred) reference compounds which are closest to the claimed compounds, which the Examiner has admitted are not compounds claimed by Applicants. By itself, this reference clearly does not teach or suggest the claimed invention.

These references also do not teach or suggest the claimed invention as a whole when taken in combination, for the reasons stated below.

The Examiner has used Applicants' invention as a guide to select those compounds within the broad genus of each reference which are closest to Applicants' claimed compounds and has erroneously concluded that it would have been obvious to replace the alpha hydrogen on the compounds of Abou-Gharbia '552 with the phenyl group taught by Cliffe '278 to obtain the instant invention, with the expectation that the compounds would have the properties claimed by Applicants. The Examiner has not explained why this particular substitution would be obvious to make, rather than some other substitution; logically, one would be much more likely to try to replace the adamantyl group in the compound of Abou-Gharbia '552 with the preferred group from Cliffe '278, for example, which would produce a compound less similar to the claimed compounds. The prior art suggests neither selecting these particular compounds, nor making the substitution suggested by the Examiner, nor how to make that substitution. In fact, because Cliffe says that other compounds are preferred over the compound of its example 37, one would be very unlikely to select that compound as a starting point for creating new and improved compounds.

These references provide ample opportunity for one to imagine many possible modifications which would not produce the claimed compounds, and the references provide no reason to prefer the modification the Examiner has suggested over the many other possibilities. "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Fritch, 23 USPQ2d 1780, 1783-4 (Fed. Cir. 1992). The prior art does not do so.

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." In re Fritch, 23 USPQ2d at 1784. "At best, in view of these disclosures, one skilled

in the art might find it obvious to try various combinations [of elements].... However, this is not the standard of 35 U.S.C. § 103." In re Geiger, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

The Examiner has also suggested that it would have been obvious to select the non-preferred compound in Cliffe's Example 37, which differs from one of the claimed compounds in that it contains a cyclohexyl group instead of an adamantyl group, and use adamantyl acyl chloride disclosed in Abou-Gharbia in another context to transform the cylclohexyl compound into the corresponding adamantyl compound. Although it is unclear whether the Examiner is relying on this as a ground for rejection, or merely mentioned it in passing, Applicants will address this suggestion for the sake of completeness. The Examiner has not said where in the art the selection of this Cliffe compound and its subsequent reaction with adamantyl acyl chloride are taught or suggested. No such teachings or suggestions exist in the cited art.

If one skilled in the art were considering Cliffe to learn how to make new compounds for the same use as the Cliffe compounds, that person would not have any reason to select the compound of Example 37 rather than the preferred compounds of Cliffe. That person also would not be guided or motivated to look at Abou-Gharbia and select the adamantyl acyl chloride to react with the non-preferred Cliffe compound. The Examiner has failed to identify any specific motivation in the art to carry out such an exercise.

The test for obviousness is not whether one armed with Applicants' teaching can find similar compounds and figure out how to reconstruct the invention in hindsight, but rather, at the time the invention was made would the prior art clearly guide or motivate one of ordinary skill in the art (who does not have knowledge of Applicants' invention) to make the invention. See, In re Kotzab, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). In this case, the prior art clearly would not guide one to make the invention. One considering the cited prior art without knowledge of Applicants invention would have no reason to make the particular selections and modifications of prior art compounds that the Examiner has indicated.

The Examiner has engaged in a classic exercise of hindsight reasoning. At every step in the Examiner's analysis, Applicants' invention has been used as a guide to select the "right" pieces with which to assemble the invention. The Examiner has repeatedly failed to explain, or even hint, at where in the references one skilled in the art would find the motivation or guidance to make all the "right" choices for each genus, and further to combine the reference teachings to make the only substitution in the compounds of the '552 patent

that would produce the Applicants' invention. The Examiner set out to reconstruct the invention from the prior art, and that provided the necessary "guidance" to make all the "right" choices. This guidance, however, does not exist in the prior art. Consequently, the present invention would not have been obvious to those skilled in the art at the time the invention was made, absent knowledge of the present invention.

An additional and separate reason that Applicants' invention would not have been obvious to one skilled in the art who did not have the benefit of Applicants' teaching, is that the skilled practitioner could not predict that the claimed compounds would function as they do. The present invention comprises compounds that have agonist or partial agonist activity (specification page 18, line 36, to page 19, line 16) and thus are useful for treating stroke; no such use or activity is disclosed in the cited references. One seeking compounds for this use would not be drawn to these particular references, and certainly not to the particular compounds that the Examiner has relied upon.

A further separate basis for finding that the invention is not obvious is that the prior art does not teach one how to make the compounds of the present invention. To make the invention obvious, the prior art must contain sufficient teachings to enable one skilled in the art to make the invention without undue experimentation. Akzo N.V. v. I.T.C., 1 USPQ2d 1241, 1245 (Fed. Cir. 1986).

Compounds which have different structures require different starting materials and, even when the structures seem very similar, an entirely different synthesis route may be needed. Therefore, the method for making the structurally different compounds must be clear from the prior art. In chemistry, one cannot simply pull a group off one prior art compound and plug it into another at a desired site. The Examiner has failed to respond to Applicants' request for an explanation of where in the cited art the requisite teaching is found. The reason for this failure is obvious from the references - the requisite teaching is not contained therein.

For all the foregoing reasons, Applicants urge the Board to find that the cited references, whether taken individually or in combination, do not teach or suggest the claimed invention, and to vacate the rejection of claims 1-3 under 35 U.S.C. § 103(a).

C. The objection to claims 4, 7-12, and 14-15 should be withdrawn becaus claim 1 is patentabl .

Applicants respectfully request that the objection to claims 4, 7-12 and 14-15, based on their dependence on rejected claim 1, should be set aside, and that all these claims should be allowed because, as discussed above, claim 1 is allowable.

D. Conclusion

The rejection of claims under 35 U.S.C. § 112, first paragraph, must fall, since the description in the specification as originally filed is sufficient to meet the requirements of the law.

The rejection of claims 1-3 under 35 U.S.C. § 103(a) must fall because the prior art fails to fairly suggest making the compounds claimed by Applicants, fails to teach how to make such compounds, fails to teach the agonist or partial agonist activity of the claimed compounds, and fails to teach that the claimed compounds may be used to treat stroke.

The objection to claims 4, 7-12 and 14-15 must fall because the claim they depend on is patentable.

A favorable ruling on appeal is respectfully solicited.

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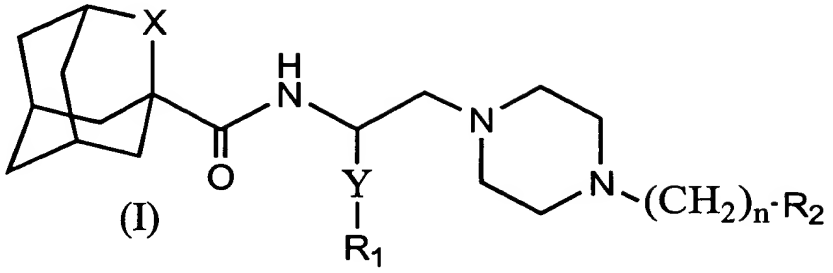
IX. Appendix - Claims

1. A compound of the formula (I):



(I)

X is selected from $-CH_2-$ or a chemical bond;

Y is selected from $-(CH_2)_m-$ or $-(CH_2)-O-(CH_2)-$;

m is selected from the integer 0 or 1;

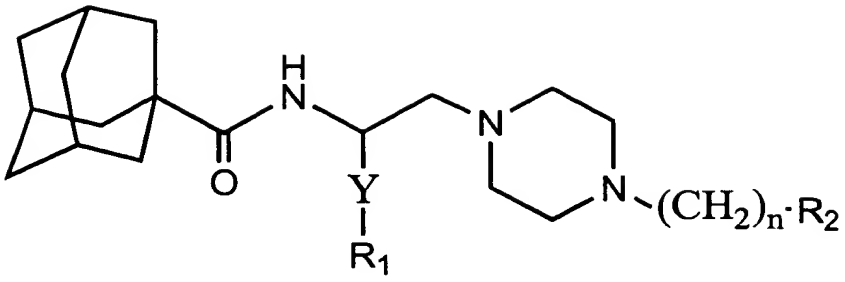
n is selected from the integer 0 or 1;

R_1 and R_2 are independently selected from the group consisting of aryl, monocyclic heteroaryl having 5 – 6 ring atoms of which 1-3 ring atoms are independently selected from the group consisting of N, S and O, and bicyclic heteroaryl having a phenyl ring fused to a monocyclic heteroaryl ring as defined above, optionally substituted with F, Cl, Br, I, -OH, $-NH_2$, $-CO_2H$, $-CO_2-C_1-C_6$ alkyl, -CN, $-NO_2$, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_1-C_6 perhaloalkyl, OR_3, or C_1-C_6 perhaloalkoxy;

R_3 is selected from the group consisting of H, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_6-C_{10} aryl, monocyclic heteroaryl having 5 –6 ring atoms of which 1-3 ring atoms are independently selected from the group consisting of N, S and O, and bicyclic heteroaryl having a phenyl ring fused to a monocyclic heteroaryl ring as defined above, C_7-C_{14} aralkyl, and mono or bicyclic heteroaralkyl consisting of a C_1-C_4 alkyl having a substituent which is a mono or bicyclic heteroaryl as defined above, where the aryl or heteroaryl group is optionally substituted with one to three substituents independently selected from the group consisting of F, Cl, Br, I, CN, $-NH_2$, $-NO_2$, -OH, alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_1-C_6 perhaloalkyl, C_1-C_6 alkoxy, and C_1-C_6 perhaloalkoxy;

and the optical isomers or a pharmaceutically acceptable salt thereof.

2. A compound of Claim 1 having the formula:



wherein:

Y is selected from $-(CH_2)_m-$ or $-(CH_2)-O-(CH_2)-$;

m is selected from the integer 0 or 1;

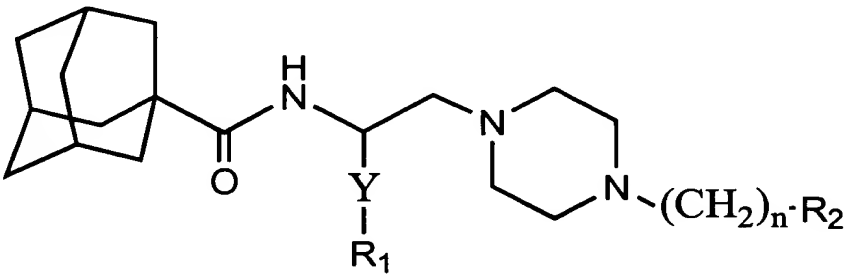
n is selected from the integer 0 or 1;

R_1 is phenyl optionally substituted with F, Cl, Br, I, -OH, $-NH_2$, $-CO_2H$, $-CO_2-C_1-C_6$ alkyl, -CN, $-NO_2$, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_1-C_6 perhaloalkyl or C_1-C_6 perhaloalkoxy;

R_2 is selected from phenyl, napthyl, piperazinyl, pyridine, thiophene, furan, imidazole, oxazole, pyrrole, pyrimidine, pyridazine, pyrazine, thiazole or oxathiazole;

and the optical isomers or a pharmaceutically acceptable salt thereof.

3. A compound of Claim 1 of the formula:



wherein:

Y is selected from $-CH_2-$;

m is selected from the integer 0 or 1;

n is selected from the integer 0 or 1;

R_1 is phenyl optionally substituted with F, Cl, Br, I, -OH, $-NH_2$, $-CO_2H$, $-CO_2-C_1-C_6$ alkyl, -CN, $-NO_2$, C_1-C_6 alkyl, C_1-C_6 alkoxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_1-C_6 perhaloalkyl or C_1-C_6 perhaloalkoxy;

R_2 is phenyl or pyrimidinyl;

and the optical isomers or a pharmaceutically acceptable salt thereof.

4. A compound of Claim 1 which is (R)-N-[1-(Phenylmethyl)-2-[4-(phenylmethyl)-1-piperazinyl]ethyl]tricyclo[3.3.1.1^{3,7})]-decane-1-carboxamide Dihydrochloride Dihydrate.

7. A compound of Claim 1 which is (R)-N-[1-(Phenylmethyl)-2-[4-(phenylmethyl)-1-piperazinyl]ethyl]tricyclo-[3.3.1.1^{3,7})]-decane-1-carboxamide Dihydrochloride Dihydrate.

8. A compound of Claim 1 which is (S)-N-[1-(Phenylmethyl)-2-[4-(phenylmethyl)-1-piperazinyl]ethyl]tricyclo[3.3.1.1^{3,7})]-decane-1-carboxamide Dihydrochloride Dihydrate.

9. A compound of Claim 1 which is (R)-N-[1-(Phenylmethyl)-2-[4-(2-pyrimidinyl)-1-piperazinyl]ethyl]tricyclo[3.3.1.1^{3,7})]-decane-1-carboxamide Hemihydrate

10. A compound of Claim 1 which is (S)-N-[1-(Phenylmethyl)-2-[4-(2-pyrimidinyl)-1-piperazinyl]ethyl]tricyclo[3.3.1.1^{3,7})]-decane-1-carboxamide

11. A compound of Claim 1 which is (R)-N-[1-((Phenylmethoxy)methyl)-2-[4-(phenylmethyl)-1-piperazinyl]ethyl]tricyclo-[3.3.1.1^{3,7})]-decane-1-carboxamide Dihydrochloride Dihydrate

12. A compound of Claim 1 which is (R)-Adamantane-1-carboxylic acid [1-(phenylmethyl)-2-[4-(2-methoxyphenyl)-piperazinyl]ethyl]-amide Hemifumarate Hemihydrate.

14. A compound of Claim 1 which is (R)-Adamantane-1-carboxylic acid [1-(phenylmethyl)-2-[4-(2-methoxyphenyl)-piperazinyl]ethyl]-amide Hemifumarate Hemihydrate.

15. A compound of Claim 1 which is (S)-Adamantane-1-carboxylic acid [1-(phenylmethyl)-2-[4-(2-methoxyphenyl)-piperazinyl]ethyl]-amide Hemifumarate Hydrate.

16. A method for treating stroke comprising administering a therapeutically effective amount of a compound of Claim 1 or a pharmaceutical salt thereof, to a patient in need of said treatment.

27. The method of claim 16 wherein stroke is thromboembolic stroke.

28. The method of claim 16 wherein stroke is focal ischemia.

29. The method of claim 16 wherein stroke is global ischemia.

30. The method of claim 16 wherein stroke is transient ischemic